



Introduction to DARPA

By

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Outline



- **DARPA's Role in a Changing World**
- **DARPA Strategy, Organization, Operation, Focus Areas**

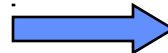
Today's Changing World



**In order to survive in the future,
institutions must organize for:**

**Peter Drucker,
Forbes, Oct. 5,
1998**

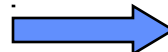
**Systematic, continuing
improvement**



DoD Analogue

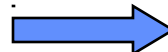
**Training and
experimentation**

**Building tomorrow's
systems based on a
proven today**



**Sustaining,
requirements-based
R&D**

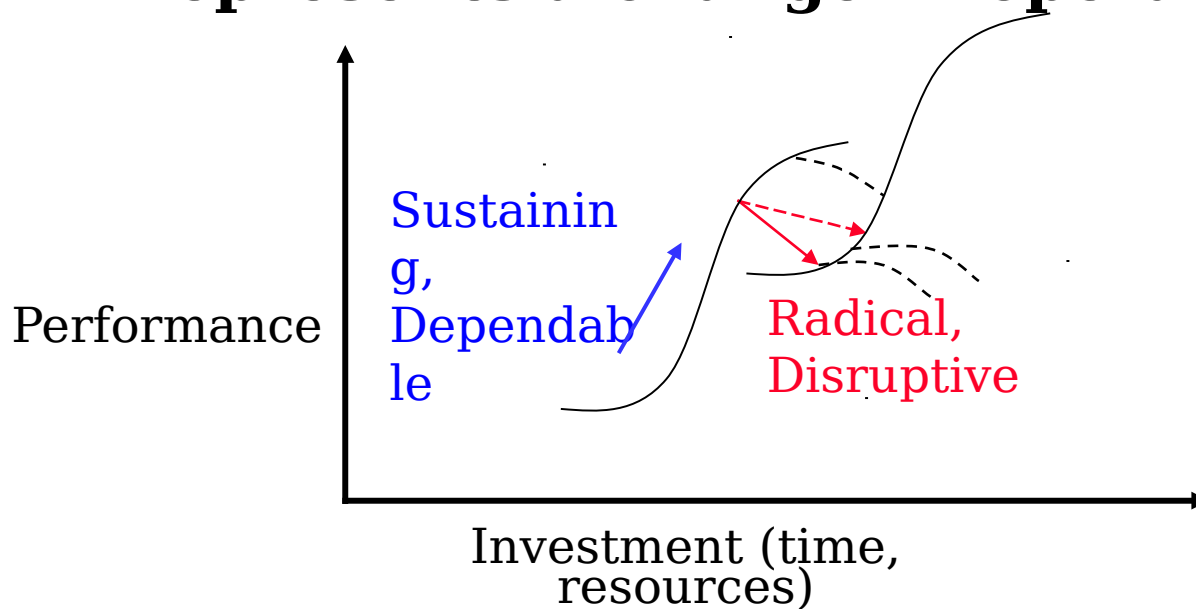
**Innovation with a goal
that makes obsolete and,
to a large extent, replaces
even the most successful
current products**



**21st Century
restatement of DARPA
mission . . . *radical
innovation***

Innovation

Innovation is more than invention -- it represents a change in operations



- **Innovation takes a long time for large institutions**
- **Radical innovation is risky**
- **Radical innovation requires leadership, dedication, protection**

DARPA Mission



Innovation in support of National Security

- **Solve National-level problems**
- **Enable Operational Dominance**
- **High Risk Technology
Development, Exploitation --*Avoid
Surprise***

DARPA's Approach



Strategy

- Flexibility, ability to quickly exploit emerging situations is the highest priority
- Emphasize high technical risk, high focus investments
- Emphasize competition for ideas, reward for quality performance
- An investment firm, not R&D lab, no established constituency
- Methodically search for and exploit externally generated ideas

Operations

- Flat, small organization, no long-term investments in facilities, themes
- Constant rotation of programs, program managers, directors
- Continuity provided by industry, other government agencies, customer
- Highly flexible contracting, hiring capabilities

DARPA is DoD's Enabler for Radical Innovation

- Broader horizon than commercial analogues
- More focused than university research

DARPA's Role



DARPA

Bottom-up, opportunity, event-driven

Great process flexibility

Integrated research

Radical change

Central DoD agency for R&D

Tolerant of high risk

Planned product obsolescence



SERVICE R&D

Top-down, requirement, schedule-driven

Highly formalized processes

6.1 - 6.5 research separated

Reliable, sustainable gains

Support Service mission

Risk-averse

Planned product improvement

The DoD requires both radical innovation
and

requirements-based R&D

DARPA Priorities



- **Attract excellent people**
- **Foster environment to encourage fair competition among the best researchers, emphasize new players**
- **Establish methodical outreach process to look for and leverage new non-DoD technologies for national security**
- **Establish partnerships with CINCs and Service leadership to implement iterative experimentation and analysis**

DARPA Investment Criteria



- **We constantly ask our Technical Directors/Program Managers:**
 - **What are you trying to accomplish?**
 - **How is it done now, and with what limitations?**
 - **What is truly new in your approach which will remove current limitations and improve performance? By how much?**
 - **If successful, what difference will it make?**
 - **What are the mid-term, final exams or full scale applications required to prove your hypothesis? When will they be done?**
 - **What is the DARPA “exit strategy”?**
 - **How much will it cost?**

Some Current Focus Areas



National Security

- Protection from Biological Attack
 - Reactive and proactive technical needs
- Protection from Information Attack

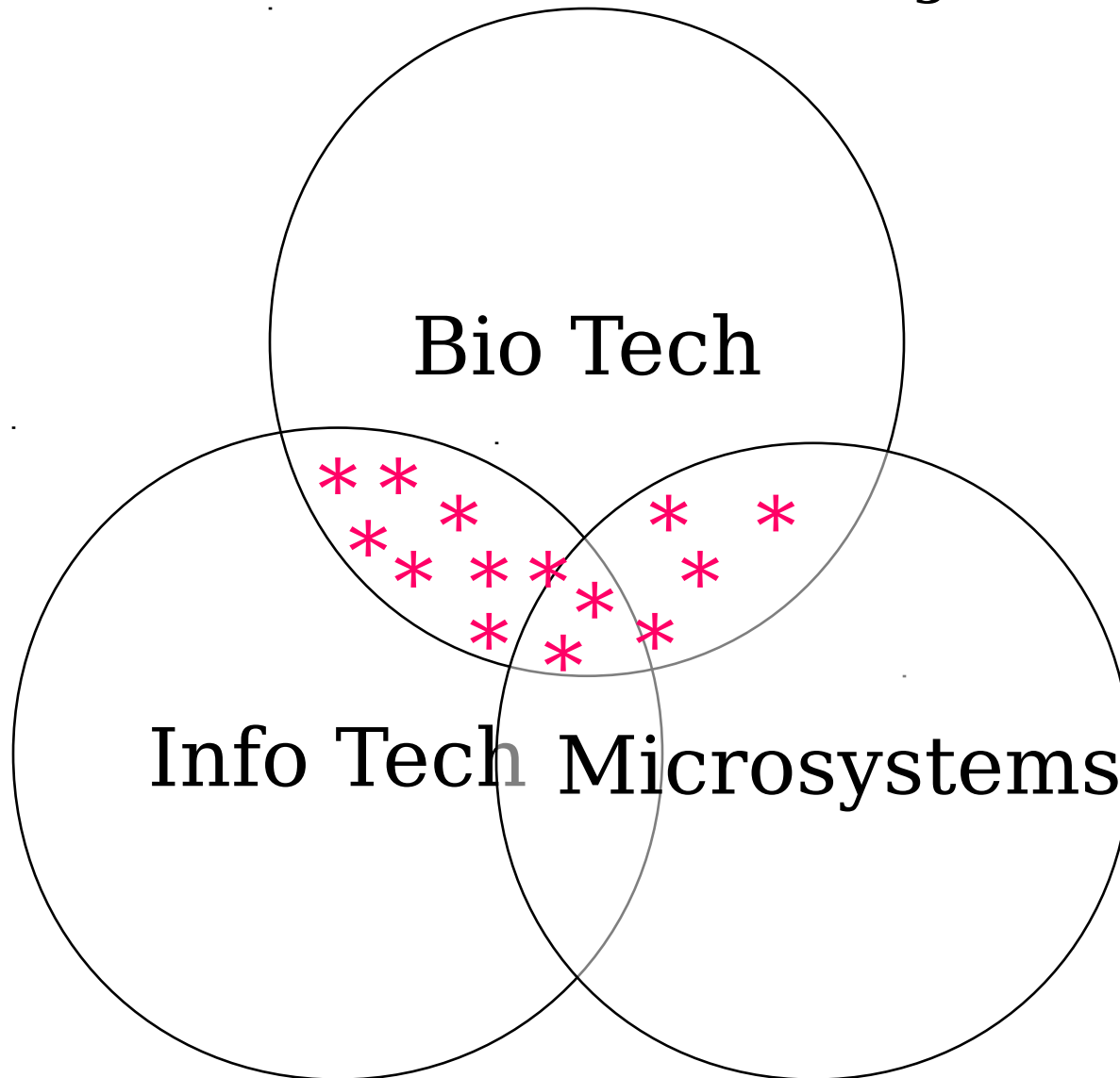
Operational Dominance

- Outcome-Based Preparation, Planning
- Affordable, Precision Moving Target Kill
 - Offensive and defensive
- Mobile, Distributed Communications
- Future Warfare Concepts

High-Risk Technology Exploitation

- Core Technologies
- The Intersection of Biology, Information and Microsystems

Exploring the Interface between Biological Technology and More Conventional DoD Technologies



DARPA Organization

